Koa Moth

(Scotorythra paludicola)

April 2013 Update

The koa moth (or *koa looper*) is an endemic (native to a particular place and found nowhere else on earth) insect on the islands of Hawai‘i, Maui, and O‘ahu. The caterpillars feed only on koa leaves and are capable of defoliating mature koa trees. Population explosions have been documented historically on Maui and Hawai‘i islands, where large areas of koa forest have been defoliated. An outbreak was recently detected in the Hilo and Hāmākua regions of the Hawai‘i Island.

Description: The wingspan of the koa moth is roughly 1.5 – 2 inches and wing color varies from pale to dark brown. Some may feature bands across the wings with small dark dots or crescents on each wing. The larvae are referred to as “looper” caterpillars, referring to their typical “inchworm” movement. The caterpillars start out tiny and black, but grow to about 1 inch long, and can vary in color and pattern, from grey, to brown, to green.

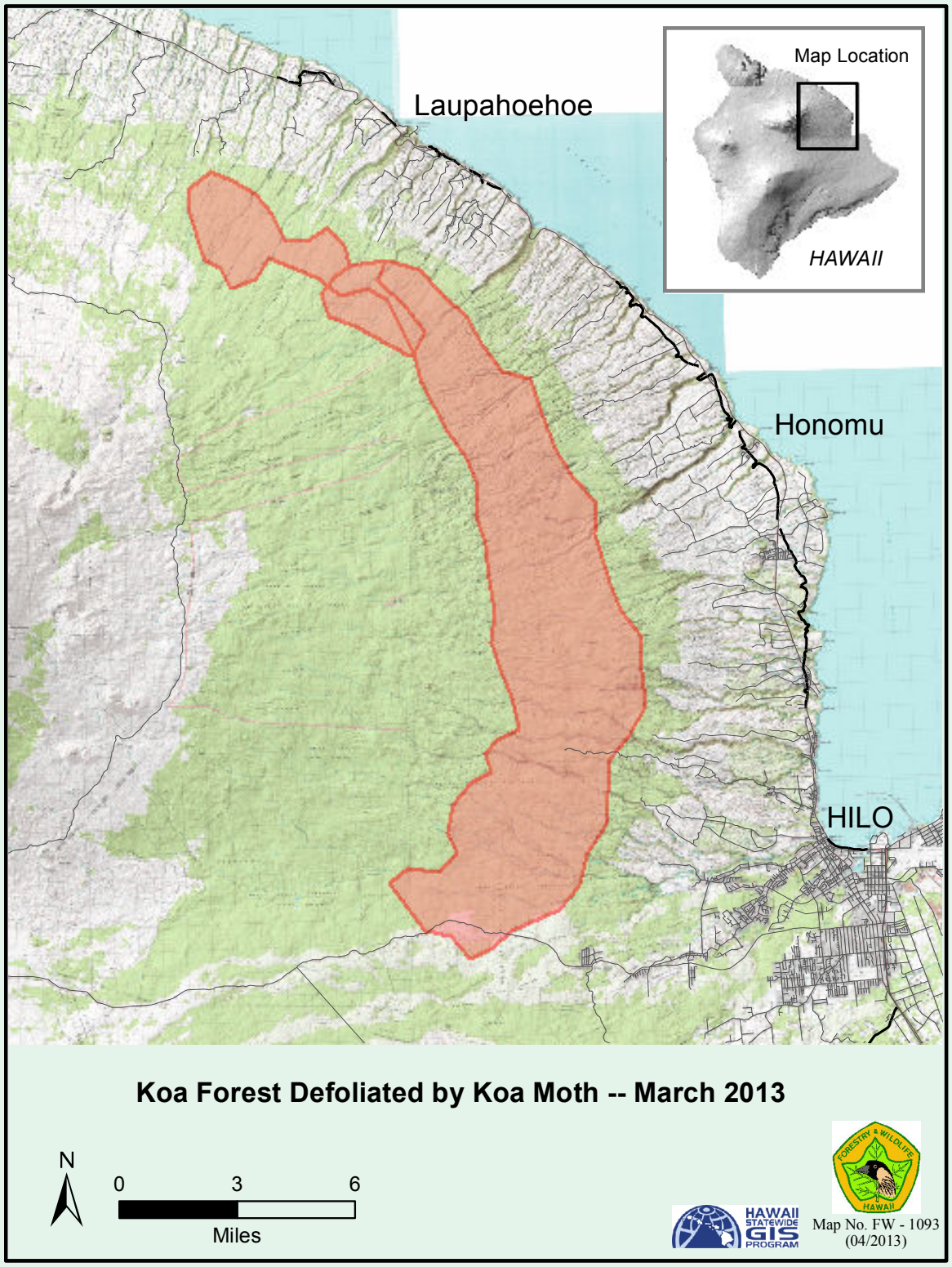
Biology: The moths and caterpillars are normally present at low levels in koa forest. Young caterpillars feed by scraping the surface of phyllodes (often referred to as mature koa “leaves”), producing scars that start out light green and turn brown as the tissue dies, giving the phyllodes a splotchy appearance. Older caterpillars are able to chew through whole phyllodes, causing chewing damage along the margins. The caterpillar stage lasts about a month, followed by a pupation stage of 10-12 days. Adults live for weeks, are usually active at night, and are believed to lay their eggs under bark and in patches of moss on koa trunks. The full life cycle lasts about 2 months.

Outbreaks: Scientists do not know what triggers these occasional population explosions, but it is believed to be a natural phenomenon. Oral accounts indicate that outbreaks occurred before the first documented event in 1892. Several outbreaks have been recorded over the past 100 years on the islands of Maui and Hawai‘i, but the January 2013 outbreak is the first reported on Hawai‘i Island since the 1950’s. Prior to this, the most recently recorded outbreak in the state was on Maui in 2009. Healthy koa forests generally recover after defoliation by the koa moth, but mortality as high as 35% has been documented in forests under stress. It is common to see a few caterpillars and/or moths on koa. During outbreaks, caterpillars can be seen swarming on vegetation and the ground, or moths may be stirred up by the dozens from dark areas such as hollow logs or dead tree-fern fronds.

Controls: It is not known what eventually causes moth populations to crash, thus ending defoliation events. They may be brought under control by predators (e.g. birds, spiders, other insects), parasitoids (e.g. wasps), or diseases, or they may simply lose momentum as food resources are depleted.

Current Outbreak: In January 2013, Division of Forestry and Wildlife (DOFAW) documented extensive defoliation of large sections of mature koa forest on the Big Island. Koa trees located in the Hilo and Hamakua regions (extending from Saddle Road past Laupahoehoe), between the elevations of 1800 and 3700 feet appear to be impacted at this time. Recent survey data indicates nearly 35,000 acres of koa forest have been defoliated making this the largest koa defoliation ever documented. In addition, defoliation of albizia trees in the Akaka Falls State park has been attributed to the koa moth. This is the first time the koa moth has been observed defoliating another species. Based on data from previous outbreaks, it is possible that the koa looper outbreak will spread to other areas of the Big Island, although the exact path is unpredictable. DOFAW in cooperation with the University of Hawaii and other partners is monitoring spread of the moth and the recovery of the trees.

REPORT: Report koa defoliation as well as increased caterpillar or moth abundance if observed outside of the Hilo and Hāmākua region. Contact the Department of Land and Natural Resources: Ph: (808) 587-0166, or email: dlnr@hawaii.gov



Koa Forest Defoliated by Koa Moth -- March 2013

Map No. FW - 1093
(04/2013)